



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : A23G 9/02	A3	(11) International Publication Number: WO 98/04148 (43) International Publication Date: 5 February 1998 (05.02.98)
(21) International Application Number: PCT/EP97/03637 (22) International Filing Date: 4 July 1997 (04.07.97) (30) Priority Data: 96305497.8 26 July 1996 (26.07.96) EP (34) <i>Countries for which the regional or international application was filed:</i> AT et al. 96305499.4 26 July 1996 (26.07.96) EP (34) <i>Countries for which the regional or international application was filed:</i> AT et al. 96308362.1 19 November 1996 (19.11.96) EP (34) <i>Countries for which the regional or international application was filed:</i> AT et al. 97301719.7 14 March 1997 (14.03.97) EP (34) <i>Countries for which the regional or international application was filed:</i> AT et al. 97301733.8 14 March 1997 (14.03.97) EP (34) <i>Countries for which the regional or international application was filed:</i> AT et al. (71) Applicant (for all designated States except AU BB CA GB IE KE LK LS MN MW NZ SD SG SZ TT UG): UNILEVER N.V. [NL/NL]; Weena 455, NL-3013 AL Rotterdam (NL).		(71) Applicant (for AU BB CA GB IE KE LK LS MN MW NZ SD SG SZ TT UG only): UNILEVER PLC [GB/GB]; Unilever House, Blackfriars, London EC4P 4BQ (GB). (72) Inventors: BYASS, Louise, Jane; The University of York, Dept. of Biology, The Plant Laboratory, Heslington, York YO1 5YW (GB). DARLING, Donald, Frank; Unilever Research Colworth Lab., Colworth House, Sharnbrook MK44 1LQ (GB). DOUCET, Charlotte, Juliette; The University of York, Dept. of Biology, The Plant Laboratory, Heslington, York YO1 5YW (GB). FENN, Richard, Anthony; Unilever Research Colworth Lab., Colworth House, Sharnbrook MK44 1LQ (GB). LILLFORD, Peter, John; Unilever Research Colworth Lab., Colworth House, Sharnbrook MK44 1LQ (GB). McARTHUR, Andrew, John; Unilever Research Colworth Lab., Colworth House, Sharnbrook MK44 1LQ (GB). NEEDHAM, David; Unilever Research Colworth Lab., Colworth House, Sharnbrook MK44 1LQ (GB). SIDEBOTTOM, Christopher; Unilever Research Colworth Lab., Colworth House, Sharnbrook MK44 1LQ (GB). SMALLWOOD, Keith; Unilever Research Colworth Lab., Colworth House, Sharnbrook MK44 1LQ (GB). SMALLWOOD, Margaret, Felicia; University of York, Dept. of Biology, The Plant Laboratory, Heslington, York YO1 5YW (GB). (74) Agent: UNILEVER N.V.; Patent Division, P.O. Box 137, NL-3130 AC Vlaardingen (NL). (81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> (88) Date of publication of the international search report: 23 April 1998 23.04.98)
(54) Title: FROZEN CONFECTIONERY PRODUCTS (57) Abstract Plant anti-freeze proteins can advantageously be incorporated into frozen confectionery products, provided they have the capability of limiting the growth of ice crystals.		

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav	TM	Turkmenistan
BF	Burkina Faso	GR	Greece		Republic of Macedonia	TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's	NZ	New Zealand		
CM	Cameroon		Republic of Korea	PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 97/03637

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A23G9/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A23G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 92 22581 A (UNIVERSITY OF WATERLOO) 23 December 1992 see page 14, line 18 - line 28 see page 9, line 6 - line 11; claims 1,3,7,9,14	1,2,5,7,9
A	--- R. E. FEENEY ET AL: "antifreeze proteins: properties, mechanism of action and possible applications" FOOD TECHNOLOGY, vol. 47, no. 1, 1993, CHICAGO, pages 82-89, XP002022179 see the whole document	1
A	--- WO 94 03617 A (UNILEVER) 17 February 1994 see the whole document --- -/--	1



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

9 February 1998

Date of mailing of the international search report

13/02/1998

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040. Tx. 31 651 epo nl.
Fax: (+31-70) 340-3016

Authorized officer

Guyon, R

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/EP 97/03637

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,A	WO 97 02343 A (UNILEVER) 23 January 1997 see the whole document ---	1
P,A	WO 96 39878 A (THE PILLSBURY COMP.) 19 December 1996 see the whole document ---	1,2
A	ARBUCKLE W S: "THE FREEZING PROCESS" 1987 . ICE CREAM, PAGE(S) 232 - 238 , ARBUCKLE W S XP002022180 ---	1
A	US 4 565 643 A (SOICHI ARAI ET AL.) 21 January 1986 ---	
A	WO 95 20883 A (UNILEVER) 10 August 1995 -----	

INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/EP 97/03637

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9222581 A	23-12-92	AU 1907192 A CA 2110510 A EP 0589928 A	12-01-93 23-12-92 06-04-94
WO 9403617 A	17-02-94	AU 4571993 A	03-03-94
WO 9702343 A	23-01-97	AU 6519096 A	05-02-97
WO 9639878 A	19-12-96	US 5620732 A AU 5790496 A CA 2195950 A EP 0783254 A	15-04-97 30-12-96 19-12-96 16-07-97
US 4565643 A	21-01-86	JP 1769621 C JP 4058516 B JP 60226588 A CA 1218260 A	30-06-93 17-09-92 11-11-85 24-02-87
WO 9520883 A	10-08-95	AT 147588 T AU 681008 B AU 1664495 A CA 2182703 A CN 1140394 A CZ 9602273 A DE 69500136 D DE 69500136 T EP 0710074 A ES 2085847 T FI 963037 A HK 74397 A HU 74498 A JP 9506780 T NO 963243 A NZ 279495 A PL 315787 A SK 100796 A ZA 9500746 A	15-02-97 14-08-97 21-08-95 10-08-95 15-01-97 15-01-97 27-02-97 07-05-97 08-05-96 16-06-96 01-08-96 13-06-97 28-01-97 08-07-97 02-08-96 24-02-97 09-12-96 04-12-96 31-07-96